UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

REPORT OF PINE BEETLE SURVEYS ON THE UMATILLA NATIONAL FOREST SEASON OF 1942

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Report of Pine Beetle Surveys

on the

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ABSTRACT

Basis:

Data presented are from the eighth (1942) annual pine beetle survey.

Status of Infestation

The infestation continued downward through 1941. Indications are that this trend continued in 1942. Losses in 1941 were the lowest since the epidemic began. Current infestation is normal except in the Fossil Area where two centers of light epidemic infestation exist.

Estimated Forest Losses, 1941

No. of Trees	Volume M.B.F.	Board Ft. Per Acre	Percent of Stand
30,846	17,377	17	.37

Recommendations

No direct control is necessary.

Introduction

The eighth pine beetle survey of the ponderosa pine stands within and adjacent to the Umatilla National Forest was conducted during the period October 26-31,1942. This survey, like its predecessors was carried on as a cooperative project between the Forest Service and the Bureau of Entomology and Plant Quarantine.

The 1942 survey was largely based upon a 100 percent cruise of current beetle losses on semi-permanent, 320-acre, check plots that have been established for a number of years. Intensive records from these plots were supplemented by general observations. Of the eleven plots covered during 1941 only five were cruised in 1942. This reduction resulted from the loss of two plots due to cutting and the elimination of four others because of curtailed survey funds. Information obtained during the 1942 survey completed the loss data for 1941 and provided preliminary information on the 1942 infestation trend.

In addition to obtaining the usual loss records, the survey crew also made a 10 percent cruise of the green stand on the check plots. This green stand cruise was made by the ¼-acre random, circular plot method in conjunction with the spotting of insect-killed trees. All ponderosa pines over 9.5 inches D.B.H. on the ¼-acre plots were recorded by diameter and California risk class. The survey was carried on by Messers. M. W. Watson, J. F. Elliott, and the writer.

Losses over much of the forest were observed in a general way by the writer. These observations served as a guide in interpreting the intensive plot records in terms of losses for the forest as a whole.

Past Losses

Early reports indicate that infestation on the Umatilla increased above normal about 1927 and developed into an epidemic that reached its greatest intensity in 1932. The upward trend of the infestation was halted during the winter of 1932-33 by extreme subzero temperatures that caused widespread mortality to overwintering broods of the western pine beetle. As a result of this mortality the infestation declined abruptly in 1933 and to a somewhat further extent in 1934. An upswing occurred in 1935 and continued in 1936. During the latter season losses on the check plots averaged 1.56 percent of the stand. A sharp decline occurred in 1937 when plot losses dropped to an average of 0.62 percent of the stand. This was followed in 1938 by a moderate flareup that subsided in 1939 and 1940. In the latter year only 0.54 percent of the stand was killed on the plots.

The average annual losses on check plots are shown graphically in Figure 1. For a more detailed account of infestation conditions on the forest since 1935 refer to three previously issued office reports, covering the individual year of 1935, and the periods 1935-1938 and 1939-1940.

Plot Losses 1941-1942

The downward trend which began in 1939 continued into 1941 when plot losses averaged 37 board feet per acre or 0.41 percent of the stand, 24 percent less than the 1940 loss. On individual plots the trend in 1941 was not uniform, for losses decreased on six of the eleven plots and increased on the other five. Four of the five plots showing increases had the lowest losses recorded during 1940; whereas, five of the six plots showing a decline in 1941 had the highest losses during the previous year. Losses in 1941 were on the average the lowest since the epidemic began.

Past experience indicates that from 78 to 80 percent of the 1942 loss was perceptible at the time of survey. On this basis it is estimated that a decrease of approximately 50 percent occurred on the plots cruised during 1942.

Location of the five plots covered during the 1942 survey are shown in Figure 2. Individual plot data secured are presented in Table 1.

General Infestation Conditions

As a result of the continued decline of infestation since 1939, losses are now at the lowest level since the epidemic began. A normal to below normal infestation prevails except in the Fossil Area where a light epidemic exists around Wilson Prairie and Shelton Park. Even in these two centers infestation is on the wane. In the Shelton Park center, which has continuously supported the highest infestation on the forest, current logging operations are reducing the pine beetle hazard through cutting.

Estimates of insect-caused ponderosa pine losses during 1941 are presented by units and areas in Table 2. The intensity and distribution of these losses are shown graphically in Figure 2.

Recommendations

No conditions warrenting direct control measures existed on the forest during 1941.

Table No. 1

Pine Timber Killed by Bark Beetles on Virgin Plots

Area and Unit	Check Plot			Loss for 1941				
	Plots	Timbered Acreage	Volume of Pine	No. Trees	Volume Killed	Bd. Ft. Per Acre	Percent of Stand	Ratio to Previous Year
POMEROY								
Asotin	*Iron Springs	320	1,634,745	2	1,460	5	.09	1.46
GRANDE RONDE								
Wenaha	*Troy	300	4,355,555	18	10,656	36	.24	.93
PENDLETON								
Meacham	*Meacham	160	745,750	11	5,390	34	.72	3.76
DALE								
Camas	Lucky Strike	320	2,315,880	7	6,710	21	.31	1.34
Ellis	**Deerhorn	315	2,953,215	19	8,360	27	.28	.61
Area Total		635	5,269,095	26	15,070	24	.29	.80
[illegible]ELL								
Wall Creek	*Ditch Cr.	297	1,674,855	15	8,250	28	.49	6.30
	Wilson Prairie	285	4,924,710	28	24,860	87	.58	.67
	Tupper	210	2,192,850	10	4,240	20	.20	.27
	Stalling Butte	235	1,956,210	25	22,150	94	1.13	1.34
Kinzua	**Kinzua	320	2,878,335	2	920	3	.03	.12
	Shelton	310	2,076,805	51	37,750	122	1.18	.93
Area Total		1,657	15,703,765	131	81,450	49	.52	.81
FOREST TOTAL		3,072	27,768,910	188	114,026	37	.41	.76

* Plot not cruised in 1942. Estimate of total loss based on that portion of seasons loss marked in 1941.

** Plot cut over in 1942.

Table No. 2

Umatilla — Insect Caused Ponderosa Pine Mortality

Area And Unit	Pine Type				Estimated 1941 Loss				
	Virgin	Cutover	Total Acres	Total Volume M.B.M. Jan.1, 1941	No. Trees	Volume M.B.M.	No. Trees Per Sec.	Bd.Ft. Per Acre	Percent of Stand
POMEROY									
Asotin	45,540	21,960	67,500	119,718	275	123	3	2	.10
Dayton	23,130	24,070	47,200	122,497	280	126	4	3	.10
Area Total	68,670	46,030	114,700	242,215	555	249	3	2	.10
GRANDE RONDE									
Meraha	91,440	—	91,440	419,608	1,810	905	13	10	.22
Elgin	5,480	44,640	50,120	95,156	190	95	4	2	.10
Area Total	96,920	44,640	141,560	514,764	2,000	1,000	9	7	.19
PENDLETON									
Milton	13,240	8,360	21,600	52,921	20	9	—	—	—
Meacham	49,220	18,600	67,820	225,509	420	189	4	3	.03
Pilot Rock	22,170	4,640	26,810	124,177	410	185	10	7	.15
Gurdane	19,450	1,720	21,170	185,196	645	290	19	13	.16
Rhea Cr.	20,070	5,840	25,910	171,219	725	326	18	13	.19
Area Total	124,150	39,160	163,310	759,022	2,220	999	9	6	.13
LAGRANDE									
LaGrande	8,240	62,320	70,560	91,926	400	200	4	3	.22
Starkey	46,300	52,000	98,300	254,588	1,405	703	9	7	.28
Area Total	54,540	114,320	168,860	346,514	1,805	903	7	6	.29

Table No. 2

Insect Caused Ponderosa Pine Mortality

Area And Unit	Pine Type				Estimated 1941 Loss				
	Virgin	Cutover	Total Acres	Total Volume M.B.M. Jan. 1, 1941	No. Trees	Volume M.B.M.	No. Trees Per Sec.	Bd. Ft. Per Acre	Percent of Stand
DALE									
Ukiah	60,600	9,160	69,760	462,953	1,910	1,050	18	15	.23
Ellis	107,930	1,760	109,690	717,739	4,735	2,604	27	24	.36
Area Total	168,530	10,920	179,450	1,180,692	6,645	3,654-	24	20	.31
FOSSIL									
Hardman	47,590	7,400	54,990	421,320	3,485	2,091	40	38	.50
Wall Creek	109,240	1,560	110,810	654,713	7,310	4,386	42	40	.67
Kinzua	56,720	62,360	119,080	618,315	6,825	4,095	37	34	.66
Area Total	213,550	71,320	284,880	1,694,348	17,620	10,572	40	37	.63
FOREST TOTAL	726,370	326,390	1,052,760	4,737,555	30,845	17,377	19	17	.37

Figure No. 1

SPEED OF CHECK PLOT LOSSES

KAIBAB NATIONAL FOREST

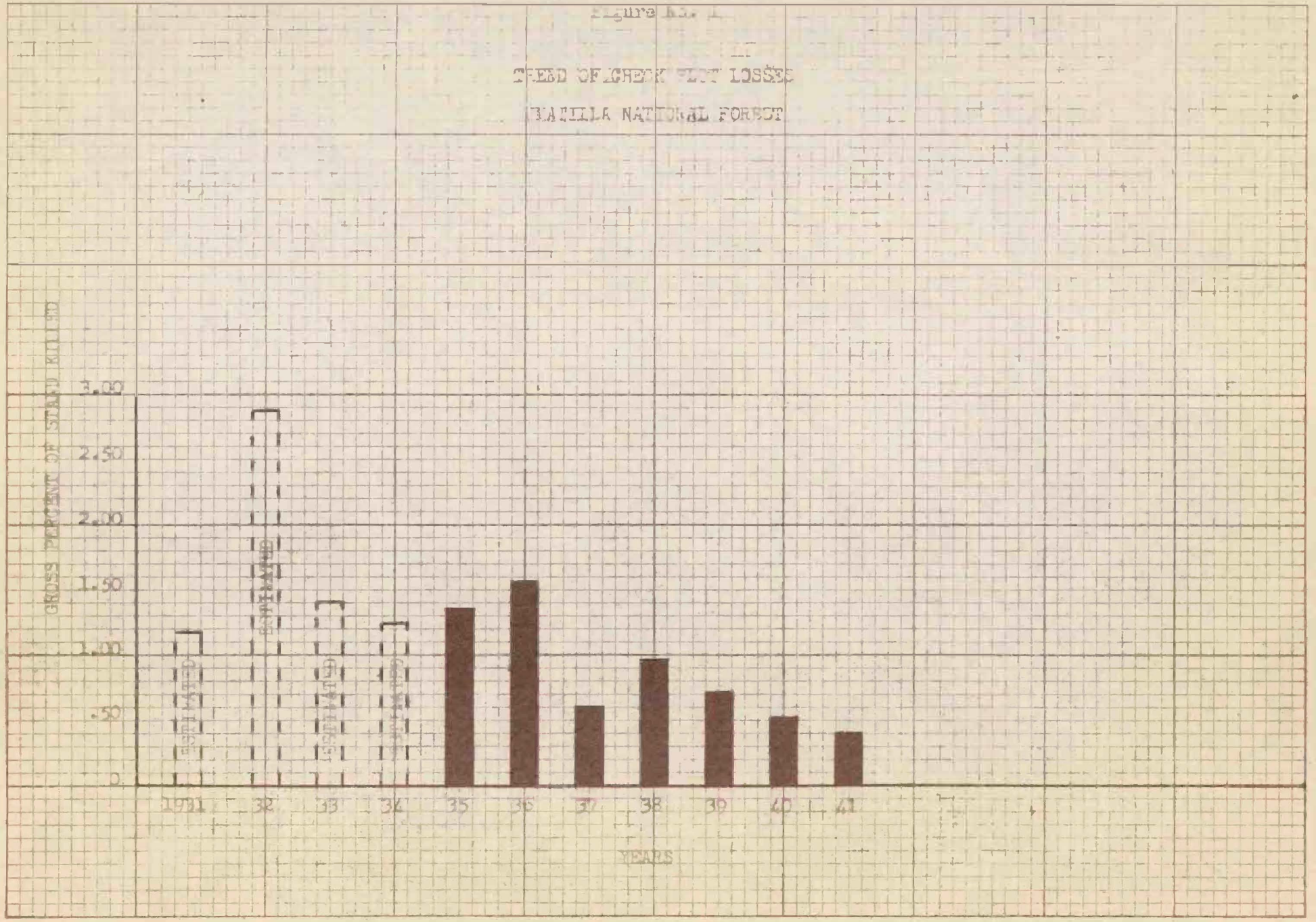
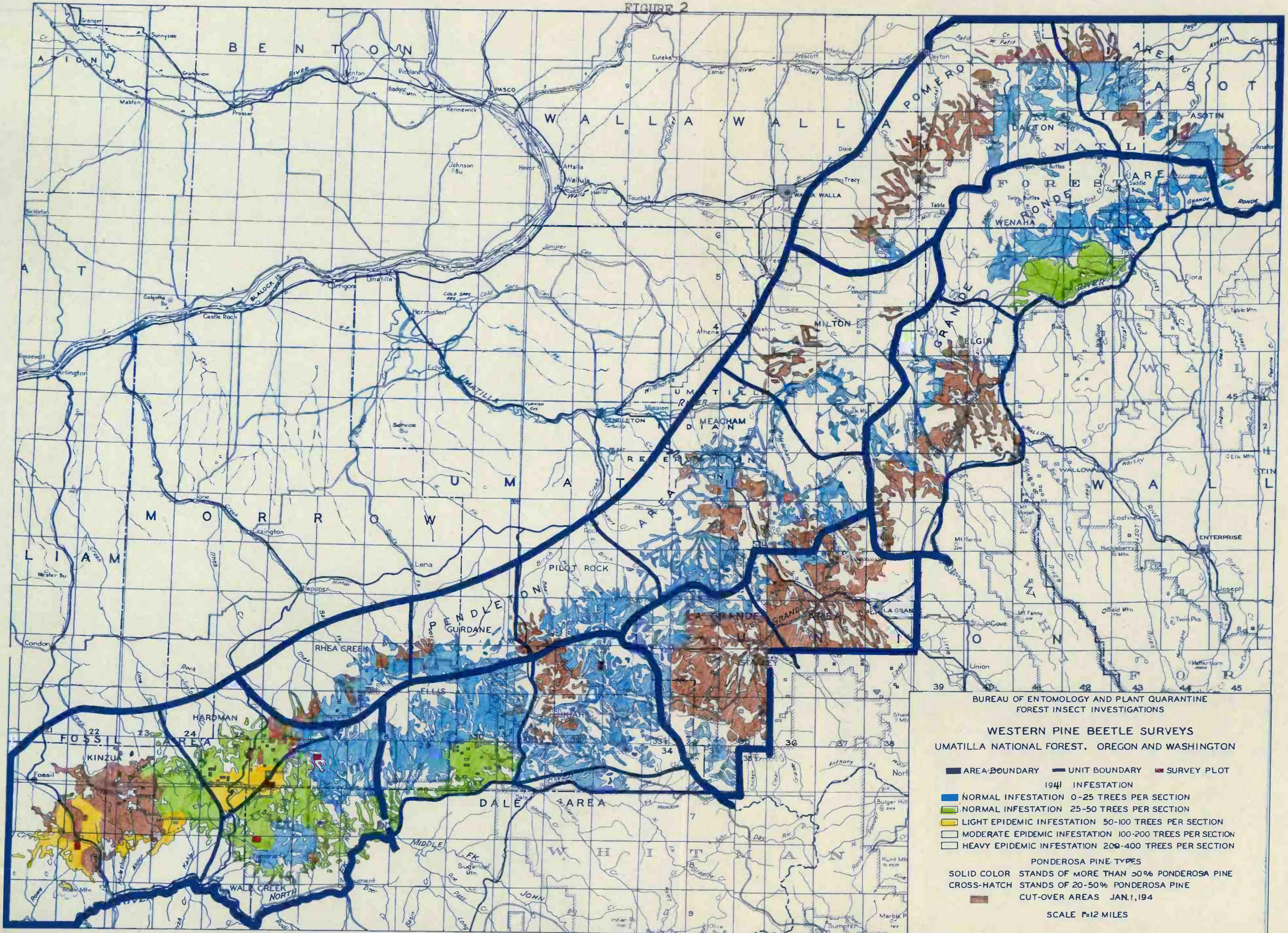


FIGURE 2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FOREST INSECT INVESTIGATIONS
WESTERN PINE BEETLE SURVEYS
UMATILLA NATIONAL FOREST. OREGON AND WASHINGTON
AREA BOUNDARY
UNIT BOUNDARY
SURVEY PLOT
1941 INFESTATION
NORMAL INFESTATION 0-25 TREES PER SECTION
NORMAL INFESTATION 25-50 TREES PER SECTION
LIGHT EPIDEMIC INFESTATION 50-100 TREES PER SECTION
MODERATE EPIDEMIC INFESTATION 100-200 TREES PER SECTION
HEAVY EPIDEMIC INFESTATION 200-400 TREES PER SECTION
PONDEROSA PINE TYPES
SOLID COLOR STANDS OF MORE THAN 50% PONDEROSA PINE
CROSS-HATCH STANDS OF 20-50% PONDEROSA PINE
CUT-OVER AREAS JAN. 1, 194
SCALE 1"=12 MILES
BENTON
WALLA WALLA
POMEROY AREA
ASOTIN
DAYTON
WENAHA
FOREST AREA
GRANDE RONDE
UMATILLA NATL FOREST
MILTON
ELGIN
MEACHAM
UMATILLA INDIAN RESERVATION
UMATILLA
MORROW
PENDLETON
PILOT ROCK
GURDANE
RHEA CREEK
ELLIS
UKIAH
HARDMAN
FOSSIL AREA
KINZUA
DALE AREA
LA GRANDE AREA
WALL CREEK
WHITMAN
UNION
WALLOWA
ENTERPRISE
PASCO
Kennewick
Richland
Prosser
Sunnyside
Granger
Grandview
Mabton
Umatilla
Hermiston
Echo
Athena
Weston
Heppner
Lexington
Ione
Condon
Fossil
Arlington
Lena
Dayton
Waitsburg
Prescott
Eureka
Touchet
Wallula
Attalia
Tracy
Dixie
Flora
Joseph
Lostine
Union
Cove
Elgin
Sumpter